

## THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

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1. A position sensing and control apparatus comprising:  
a first supply voltage means supplying a first supply voltage;  
a sensor powered by said supply voltage and operatively connected to a first member moveable relative to a second member to produce a voltage representative of the position of said first member relative to said second member; and  
a voltage to current converter having a reference voltage supply for converting the voltage output of said sensor to a current wherein said first supply voltage has a ratiometric relationship with said reference voltage.

2. A position sensing and control apparatus according to claim 1 further comprising:  
a storage means for storing values of said current representative of a state of a respective sensor; and  
a control circuit for controlling the movement of said first member, arranged to move said first member until said voltage to current converter output is substantially the same as a said stored value of current.

3. A position sensing and control apparatus according to claim 1 further comprising:  
a voltage detector for detecting said first supply voltage that prevents said first supply voltage from being supplied to said sensor when a greater than predetermined voltage is detected.

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4. A position sensing and control apparatus according to claim 3 wherein said voltage detector further comprises a switch interposed between said control circuit and said first supply voltage means used to isolate said control circuit and said supply voltage means when said first supply voltage is smaller or greater than predetermined voltages.

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5. A position sensing and control apparatus according to claim 4 wherein said switch comprises a transistor the base of which is connected to and controlled by an output voltage of said voltage detector means.

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6. A position sensing and control apparatus according to claim 1 wherein said sensor is a Hall Effect device.

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7. A position sensing and control apparatus according to claim 1 wherein said voltage to current means comprises an operational amplifier having a positive and negative input for receiving a voltage output from said sensor at said positive input and an output of said operational amplifier being high when said positive input is greater than said negative input, the output of said operational amplifier being input to the base of an emitter follow transistor the emitter of which is connected to a resistive means to ground and above which a voltage feed back circuit to said negative input of said operational amplifier is provided, wherein as said feedback voltage reaches the value of said input voltage to said positive input the output voltage of said operational amplifier decreases until said positive and negative voltage inputs are the same the result of which there is, as a result of the ratiometric relationship between the reference between said first supply voltage of said sensor and said reference voltage supply of said voltage to current means, the current through said resistance means is representative of said sensor position.

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8. A position sensing and control apparatus according to claim 7 wherein the collector current of said emitter follow transistor is substantially the same as said current through said resistance means.

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